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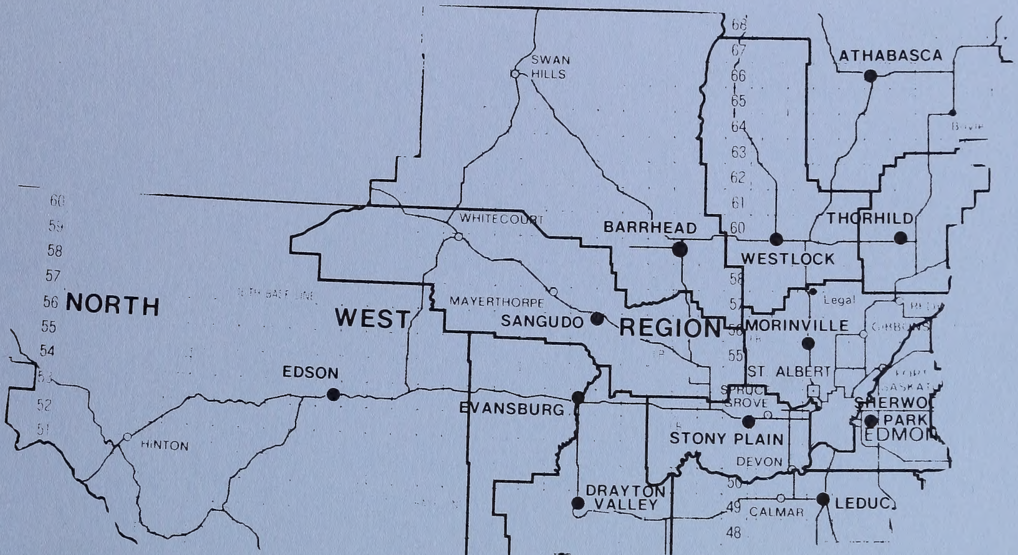
A CONSENSUS OF

Costs and Returns

Fababeans, Barley, Canola, Wheat on a 1000 Acre Farm in the Morinville District



NORTHWEST ALBERTA

Alberta
AGRICULTURE
Economic Services Division
Production and Resource Economics Branch

CONSENSUS OF COSTS AND RETURNS

FOR

FABABEANS, BARLEY, CANOLA AND WHEAT

IN THE

MORINVILLE DISTRICT

BY

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ASSISTANT REGIONAL ECONOMIST, WESTLOCK

APRIL 1986

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THE CONSENSUS RESEARCH DATA (C.R.D.) TECHNIQUE[1]

The C.R.D. or data sheet approach relies on group participation of interested farmers to arrive at a consensus of opinion on costs and returns. This consensus relates not area averages, but rather typical figures for the group of producers who provided the data. This distinction is important since different production practices carried out in small pockets within a larger area are often not truly reflected in average figures, (i.e. spring plowing in an area where discing is more common). Conversely, if within a given area there is a pocket of highly specialized crop density where certain production practices are different, then the specialized costs of that practice can bias the overall area average costs and render them less useful. For these and other reasons, consensus research data must be interpreted with the above conditions in mind.

Consensus figures are based on current investment and operational costs and therefore reflects the cost and return situation which would have to be contemplated by new farm operators. These figures are associated with the management and cultural expertise of the participants within a particular geographic area. While care should be exercised when applying C.R.D. data to individual cases, the greatest advantage of the technique is that it can be specific (i.e. to the rotation, cultural practice, breed or ration), timely, locally oriented and based on the cumulative experience of farmers operating in the area.

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[1] For more information on the C.R.D. technique, contact your Regional Economist, District Agriculturist, or the Production and Resource Economics Branch of the Alberta Department of Agriculture.

THE CONSENSUS RESEARCH DATA (C.R.D.) TECHNIQUE1/

The C.R.D. as data source approach relies on group participation of interested farmers to arrive at a consensus of opinion on inputs and returns. This consensus relates not to some average, but rather typical figure for the group of producers who provided the data. This distinction is important since different producers [illegible] small pockets within a larger area and which may to be masked by average figures. (i.e. winter grazing in an area where spring is more common). Conversely, if within a given area there is a pocket so highly specialized [illegible] surface production practices are different, then the individual costs of that practice can make the overall area average costs and returns that less useful. For these and other reasons, consensus research data must be interpreted with the above considerations made.

Consensus figures are based on current technology and operational costs and therefore reflects the cost and return situation which would have to be contemplated by new farm operators. These figures are developed from the management and cultural expertise of the participants within a particular geographic area. While care should be exercised when applying C.R.D. data to individual cases, the principal advantage of the technique is that it can be specific (i.e., to the location, cultural practice, breed of cattle), timely, locally oriented and based on the cumulative experience of farmers operating in the area.

1/ For more information on the C.R.D. technique, contact your regional Economist, District Agriculturalist, or the Production and Resource Economics Branch of the Alberta Department of Agriculture.

INTRODUCTION

Today's farming demands that cost and return information be available for all alternatives which the producer should consider when planning future production. With today's high cost of inputs and machinery investment, it is particularly necessary to have good information available when making management decisions.

This report provides an estimate of the cost and returns based on the consensus of a group of farmers in the Morinville District for Fababeans, Barley, Canola and Wheat.

OBJECTIVES

This report was prepared to provide an estimate of the cost and expected returns for production of these crops. Such information can be an important guide in decision making, but the reader should keep in mind that costs vary between producers because of differences in land, cultural and management practices. The farmer's own records are essential to determine what it actually costs to produce a crop on his own particular farm.

This report can be useful for management decisions:

1. In selecting the enterprise or crop rotation yielding the highest return;
2. In determining the amount of cash required to operate during a season;
3. In determining the amount of time expected to be spent on an enterprise;
4. For projecting the income and expense when considering new investments;
5. In determining how the income and expense should be shared in rental arrangements;
6. To compare to actual costs incurred in your farming enterprise.

SOURCE AND METHOD OF DATA COLLECTION

The information for this report was gathered from a group of farmers in the Morinville District. A day was spent with them discussing the costs involved, the complement of machinery required and the cultural practices carried out on each operation. This information was compiled and costs calculated to determine the total cost of production and the returns expected from the crops.

DEFINITIONS

Direct Costs per acre include fuel, repairs, seed, fertilizer, sprays, hired labor and cash overhead costs such as taxes, insurance and interest on operating capital. Operators comparing their direct costs to those in the C.R.D. should recognize that payments on land and equipment have not been included. Instead an interest on land and machinery investment has been charged under other costs.

Indirect Costs per acre include depreciation on buildings and machinery, and the value of operator's labor. While these costs are not out of pocket costs, the grain enterprise must provide sufficient revenue to cover these costs if the operator is to continue farming over a period of time.

Contribution Margin or Return over Cash Costs is often used by producers to compare the profitability of various crops. Contribution Margin is the residual left to pay for the operator's labor and his investment in land, machinery, building and supplies.

Gross Operating Profit is the amount left after all direct costs plus an allowance for depreciation and operator labor has been satisfied.

Interest on Investment An opportunity interest rate of 6% is charged against land while 12% interest is charged against buildings and machinery.

Total of All Economic Costs The sum total of direct costs, indirect costs and interest on investment.

ASSUMPTIONS SPECIFIC TO THIS STUDY

1. A farm in the Morinville district on black loam soil approximately 10 miles from a grain delivery point.

2. The farm consists of 1000 cultivated acres:

Fababeans	100 acres
Barley after beans	100 acres
Barley	400 acres
Canola	200 acres
Wheat	200 acres

3. Machinery is based upon the above acreage with operating costs estimated from Alberta Agriculture's publication "Farm Machinery Costs", 1986.

4. The following yields and prices were obtained:

Fababeans	3000 lb/acre @ .09/lb. (270.00/acre)*
Barley	65 bu/acre @ 1.80/bu. ($117.00/acre)
Canola	27 bu/acre @ 6.00/bu. ($162/00/acre)
Wheat	45 bu/acre @ 3.00/bu. ($135.00/acre)

5. Seeding rates:

Fababeans:	160 lbs/acre @ 23¢/lb + inoculant + sticker + membership **
Barley	1½ bu./acre @ $3.75/bu.
Canola	6 lbs./acre @ .90/lb. (treated seed)
Wheat	1½ bu. @ 6.25/bu.

6. Fertilization rates:

Fababeans:	60 lbs 11-51-0	$10.30/acre.
Barley after Beans:	50 lbs N as NH_3	$12.50/acre;
	50 lbs 11-51-0	$8.50/acre.
Barley:	70 lbs N at NH_3	$17.50/acre:
	50 lbs 11-51-0	$8.50/acre.
Canola	80 lbs N as NH_3	$20.00/acre;
	50 lbs 11-51-0	$8.50/acre.
Wheat	70 lbs N as NH_3	$17.50/acre;
	50 lbs 11-51-0	$8.50/acre.

* .09/lb. is a blended price reflecting price of .11/lb. for export for human consumption, and .07/lb. for domestic livestock feed

** Fababeans require an inoculant at a cost of $13.00 per 1000 lbs., beans and a sticker at a cost of $2.83 per 1000 lbs. beans) An additonal charge of $.25/acre is used to cover a $25.00 membership fee at the Alberta Pulse Growers' Association

7. Chemical rates:

Fababeans:	1.0 litre Treflan/acre	$13.00/acre
(tank mix)	350 ml Sencor/acre	$ 6.00/acre
Barley after Beans:	15 g Glean/acre	$ 4.20/acre
(tank mix)	1 litre Hoegrass/acre	$15.00/acre
Barley:	Avadex 1.4 litre/acre	$10.00/acre
	Lorox 200 ml/acre	$ 3.50/acre
(tank mix)	MCPA 350 ml/acre	$ 1.50/acre
Canola	Granular Treflan QR5 11kg/acre	$13.00/acre
	Applicator rental	$ .65/acre
Wheat	Hoegrass 200 ml/acre	$15.00/acre
	MCPA 450 ml/acre	$ 2.00/acre

8. Land is valued at $700.00/acre, taxes are $4.00/acre.

9. Operator labor is valued at $6.50/hour.

10. Interest on operating capital is charged at 13%.
Interest on buildings and machinery is charged at 12%
Interest on land is charged at 6%.

11. Crop buildings include:

    a) 50,000 bu. grain storage valued at $35,000.
    b) 50 x 100 machine shed valued at $20,000.
    c) 30 x 40 shop valued at $30,000.

Table 1 MACHINERY COMPLEMENT SET

NO.		NEW VALUE	YEARS LIFE	SALVAGE VALUE	HOURS USE/YR	OPERATE COST/HR	DEPRECIATION COST/HR	INVESTMENT COST/HR	ANNUAL DEPRECIATION	ANNUAL INTEREST
1.	Tractor 200	91000	7	36400	400	19.85	19.50	19.11	7800.00	7644.00
2.	Tractor 80	32000	7	12800	200	7.24	13.71	13.44	2742.86	2688.00
3.	C.P. 28	18000	14	4500	130	6.72	7.42	10.38	964.29	1350.00
4.	Disc 28	18000	14	4500	75	4.59	12.86	18.00	964.29	1350.00
5.	Harrows 60	6000	10	1500	40	1.57	11.25	11.25	450.00	450.00
6.	Drill 24	33000	14	10000	160	17.60	10.27	16.13	1642.86	2580.00
7.	Sprayer 60	6500	15	1300	60	2.65	5.78	7.80	346.67	468.00
8.	Swather 18	24000	10	7200	175	8.71	9.60	10.70	1680.00	1872.00
9.	Combine 50	85000	10	17000	210	25.85	32.38	29.14	6800.00	6120.00
10.	Truck	20000	15	6000	210	19.14	4.44	7.43	933.33	1560.00
11.	Half Ton Truck	12000	5	3600	140	6.84	12.00	6.69	1680.00	936.00
12.	Auger 8	2300	15	460	50	0.39	2.45	3.31	122.67	165.60
13.	Auger 6	2200	15	440	100	1.90	1.17	1.58	117.33	158.40
14.	Dryer 500	24000	20	4800	40	28.99	24.00	43.20	960.00	1728.00
15.	Buildings	85000	25	17000	1000		2.72	6.12	2720.00	6120.00
	TOTALS	459000		127500			169.56	204.28	29924.29	35190.00

TOTAL INVESTMENT	459000
TOTAL DEPRECIATION COST PER YEAR	29924
TOTAL INVESTMENT COST PER YEAR	35190

Table 2 OPERATIONS TABLE: FABABEANS

				HOURS PER OPERATION		COSTS PER ACRE					
MACHINERY		TIMES DONE	ACRES DONE	MACHINE	LABOUR	SEED CHEM. FERT.	OPERATING	DEPREC.	INTEREST	LABOR	TOTAL COSTS
Chisel Plow	(1,3)	1	100	8	9	.00	2.13	2.15	2.36	.59	7.22
Disc	(1,4)	3	100	8	9	.00	5.87	7.77	8.91	1.76	24.29
Sprayer	(2,7)	1	100	4	5	19.00	.40	.78	.85	.33	21.35
Drill	(1,6)	1	100	13	14	36.80	4.87	3.87	4.58	.91	47.99
Harrow	(2,5)	1	100	4	5	10.20	8.35	1.00	.99	.33	12.86
Swather	(8)	1	100	20	22	2.08	1.74	1.92	2.14	1.43	7.23
Combine	(9)	1	100	29	32	0.45	7.50	9.39	8.45	2.08	27.42
Truck	(10)	1	100	21	23	.25	4.02	.93	1.56	1.50	8.01
Half Ton	(11)	1	100	14	15	.00	.96	1.68	.94	.98	4.55
Dryer	(2,14)	.5	100	20	22	.00	3.62	3.77	5.66	.72	13.77
Auger 8	(2,12)	1	100	5	6	.00	.38	.81	.84	.39	2.42
Auger 6	(13)		100	10	11	.00	.19	.12	.16	.72	1.18
Buildings	(15)	1	1	1	00	.00	.00	2.72	2.12	.00	8.84
TOTAL COSTS					173	68.78	32.02	36.91	43.55	11.70	188.18

The numbers in parenthesis refer to the machine numbers listed in the Machinery Complement Set and are the machines used for this operation.

Table 3 COST OF PRODUCTION: FABABEANS

GROSS RETURNS:	3000 lbs @ .09			270.00
Direct Costs:	Land taxes	4.00		
	11-51-0 50 lbs per acre	10.20		
	Seed 160 lbs @ .23	36.80		
	Inoculant	2.08		
	Inoculant Sticker	.45		
	APGA Membership ($25.00)	.25		
	Treflan	13.00		
	Sencor	6.00		
	Equipment operations and maintenance	32.02		
	Interest on operating capital	14.16		
	Miscellaneous Overhead (5% of above expenses)	5.19		
			124.15	
Contribution Margin				145.85
Indirect Costs:	Depreciation on buildings and equipment	36.91		
	Operator Labour	11.70		
			48.61	
Total Direct and Indirect Costs			172.76	
Gross Operating Profit				97.24
Interest:	Land	42.00		
	Buildings and equipment	43.55		
			85.55	
Total of All Economic Costs			258.31	

Table 4

OPERATIONS TABLE: BARLEY AFTER BEANS

				HOURS PER OPERATION		COSTS PER ACRE					
MACHINERY		TIMES DONE	ACRES DONE	MACHINE	LABOUR	SEED CHEM. FERT.	OPERATING	DEPREC.	INTEREST	LABOR	TOTAL COSTS
Chisel Plow	(1,3)	2	100	8	9	12.50	4.25	4.31	4.72	1.17	26.95
Sprayer	(2,7)	1	100	4	5	8.50	.40	.78	.85	.33	10.85
Drill	(1,6)	1	100	13	14	19.20	4.87	3.87	4.58	.91	33.43
Harrow	(2,5)	1	100	4	5	5.63	.35	1.00	.99	.33	8.29
Swath	(8)	1	100	17	19	.00	1.48	1.63	1.82	1.24	6.17
Combine	(9)	1	100	20	22	.00	5.17	6.48	5.83	1.43	18.90
Truck	(10)	1	100	21	23	.00	4.02	.93	1.56	1.50	8.01
Half Ton Truck	(11)	1	100	14	15	.00	.96	1.68	.94	.98	4.55
Dryer	(2,14)	.3	100	10	11	.00	1.09	1.13	1.70	.21	4.13
Auger 8	(2,12)	1	100	5	6	.00	.38	.81	.84	.39	2.42
Auger 6	(13)	1	100	10	11	.00	.19	.12	.16	.72	1.18
Buildings	(15)	1	1	1	00	.00	.00	2.72	6.12	.00	8.84
TOTAL COSTS					140	45.83	23.15	25.45	30.10	9.18	133.72

The numbers in parenthesis refer to the machine numbers listed in the Machinery Complement Set and are the machines used for this operation.

Table 5 COST OF PRODUCTION: BARLEY AFTER BEANS

GROSS RETURNS:	65 bu/acre @ $1.80			117.00
Direct Costs:	Land taxes	4.00		
	82-0-0 50 lbs N/acre	12.50		
	11-51-0 50 lbs per acre	8.50		
	Seed 1½ bu/acre	5.63		
	Glean	4.20		
	Hoe-grass	15.00		
	Equipment operations and maintenance	23.55		
	Interest on operating capital	10.70		
	Crop Insurance	5.00		
	Miscellaneous Overhead (5% of above expenses)	3.92		
			93.00	
Contribution Margin				24.00
Indirect Costs:	Depreciation on buildings and equipment	26.23		
	Operator Labour	9.51		
			35.74	
Total Direct and Indirect Costs			128.74	
Gross Operating Profit				-(11.74)
Interest:	Land	42.00		
	Buildings and equipment	30.94		
			72.94	
Total of All Economic Costs			201.68	

Table 6 OPERATIONS TABLE: BARLEY

				HOURS PER OPERATION		COSTS PER ACRE					
MACHINERY		TIMES DONE	ACRES DONE	MACHINE	LABOUR	SEED CHEM. FERT.	OPERATING	DEPREC.	INTEREST	LABOR	TOTAL COSTS
Chisel Plow	(1,3)	1	400	36	40	17.50	2.39	2.42	2.65	.65	25.62
Disc	(1,4)	1	400	32	35	5.63	1.96	2.59	2.97	.57	13.71
Sprayer	(2,7)	2	400	16	18	8.50	.79	1.56	1.70	.59	13.13
Drill	(1,6)	1	400	52	57	4.20	4.87	3.87	4.58	.93	18.45
Harrow	(2,5)	1	400	16	18	1.50	.35	1.00	.99	.29	17.63
Swather	(8)	1	400	68	75	10.00	1.48	1.63	1.82	1.22	6.15
Combine	(9)	1	400	80	88	.00	5.17	6.48	5.83	1.43	18.90
Truck	(10)	1	400	84	92	.00	4.82	.93	1.56	1.50	8.01
Half Ton	(11)	1	400	56	62	.00	.96	1.68	.94	1.01	4.58
Dryer	(2,14)	.3	400	20	22	.00	.54	.57	.85	.11	2.07
Auger 8	(2,12)	1	400	40	44	.00	.76	1.62	1.68	.72	4.77
Auger 6	(13)	1	400	12	14	.00	.06	.04	.05	.23	.37
Buildings	(15)	1	1	1	0	.00	.00	2.72	6.12	.00	8.84
TOTAL COSTS					575	47.33	25.35	27.10	31.73	9.22	142.23

The numbers in parenthesis refer to the machine numbers listed in the Machinery Complement Set and are the machines used for this operation.

Table 7 COST OF PRODUCTION: BARLEY

GROSS RETURNS:	65 bu/acre @ $1.80			117.00
Direct Costs:	Land taxes	4.00		
	82-0-0 70 lbs N/acre	17.50		
	11-51-0 50 lbs per acre	8.50		
	Seed 1½ bu/acre	5.63		
	Avadex 1.4 l/acre	10.00		
	Lorox	4.20		
	MCPA	1.50		
	Equipment operations and maintenance	22.95		
	Interest on operating capital	10.14		
	Crop Insurance	5.00		
	Miscellaneous Overhead (5% of above expenses)	3.71		
			93.13	
Contribution Margin				23.87
Indirect Costs:	Depreciation on buildings and equipment	26.32		
	Operator Labour	8.93		
			35.25	
Total Direct and Indirect Costs			128.38	
Gross Operating Profit				-(11.38)
Interest:	Land	42.00		
	Buildings and equipment	30.88		
			72.88	
Total of All Economic Costs			201.26	

Table 8 OPERATIONS TABLE: CANOLA

				HOURS PER OPERATION		COSTS PER ACRE					
MACHINERY		TIMES DONE	ACRES DONE	MACHINE	LABOUR	SEED CHEM. FERT.	OPERATING	DEPREC.	INTEREST	LABOR	TOTAL COSTS
Chisel Plow	(1,3)	2	200	17	19	20.00	4.52	4.58	5.01	1.24	35.34
Disc	(1,4)	1	200	16	18	.00	1.96	2.59	2.97	.59	8.10
Treflan S	(2)	1	200	12	13	13.65	.43	.82	.81	.42	16.14
Drill	(1,6)	1	200	26	29	5.40	4.87	3.87	4.58	.94	19.66
Harrow	(2,5)	1	200	8	9	8.50	.35	1.00	.99	.29	11.13
Swather	(8)	1	200	34	37	.00	1.48	1.63	1.82	1.20	6.13
Combine	(9)	1	200	40	44	.00	5.17	6.48	5.83	1.43	18.90
Truck	(10)	1	200	42	46	.00	4.82	.93	1.56	1.50	8.01
Half ton	(11)	1	200	28	31	.00	.96	1.68	.94	1.01	4.58
Auger 8	(2,12)	1	200	10	11	.00	.38	.81	.84	.36	2.38
Auger 6	(13)	1	200	20	22	.00	.19	.12	.16	.72	1.18
Buildings	(15)	1	1	1	1	.00	.00	2.72	6.12	.00	8.84
TOTAL COSTS					279	47.55	24.33	27.22	31.62	9.69	140.40

The numbers in parenthesis refer to the machine numbers listed in the Machinery Complement Set and are the machines used for this operation.

Table 9 COST OF PRODUCTION: CANOLA

GROSS RETURNS:	27 bu/acre @ $6.00			162.00
Direct Costs:	Land taxes	4.00		
	82-0-0 80 lbs N/acre	20.00		
	11-51-0 50 lbs per acre	8.50		
	Seed	5.40		
	Treflan (including spreader rental)	13.65		
	Equipment operations and maintenance	24.33		
	Interest on operating capital	11.18		
	Crop Insurance	6.00		
	Miscellaneous Overhead (5% of above expenses)	4.09		
			97.15	
Contribution Margin				64.85
Indirect Costs:	Depreciation on buildings and equipment	27.22		
	Operator Labour	9.69		
			36.91	
Total Direct and Indirect Costs			134.06	
Gross Operating Profit				27.94
Interest:	Land	42.00		
	Buildings and equipment	31.62		
			73.62	
Total of All Economic Costs			207.68	

Table 10

OPERATIONS TABLE: WHEAT

				HOURS PER OPERATION		COSTS PER ACRE					
MACHINERY		TIMES DONE	ACRES DONE	MACHINE	LABOUR	SEED CHEM. FERT.	OPERATING	DEPREC.	INTEREST	LABOR	TOTAL COSTS
Chisel Plow	(1,3)	2	200	17	19	17.50	4.52	4.58	5.01	1.24	32.84
Sprayer	(2,7)	1	200	8	9	9.38	.40	.78	.85	.29	11.70
Drill	(1,6)	1	200	26	29	8.50	4.87	3.87	4.58	.94	22.76
Harrow	(2,5)	1	200	8	9	15.00	.35	1.00	.99	.29	17.63
Swather	(8)	1	200	34	37	2.00	1.48	1.63	1.82	1.20	8.13
Combine	(9)	1	200	40	44	.00	5.17	6.48	5.83	1.43	18.90
Truck	(10)	1	200	42	46	.00	4.82	.93	1.56	1.50	8.01
Half Ton	(11)	1	200	28	31	.00	.96	1.68	.94	1.01	4.58
Dryer	(2,14)	.75	200	20	22	.00	2.72	2.83	4.25	.54	10.33
Auger 8	(2,12)	1	200	10	11	.00	.38	.81	.84	.36	2.38
Auger 6	(13)	1	200	20	22	.00	.19	.12	.16	.72	1.18
Buildings	(15)	1	1	1	0	.00	.00	2.72	6.12	.00	8.84
TOTAL COSTS					279	52.38	25.05	27.42	32.94	9.51	147.29

The numbers in parenthesis refer to the machine numbers listed in the Machinery Complement Set and are the machines used for this operation.

Table 11 COST OF PRODUCTION: WHEAT

GROSS RETURNS:	45 bu/acre @ $3.00			135.00
Direct Costs:	Land taxes	4.00		
	82-0-0 70 lbs N/acre	17.50		
	11-51-0 50 lbs per acre	8.50		
	Seed 1½ bu/acre	9.38		
	Hoe-grass	15.00		
	MCPA	2.00		
	Equipment operations and maintenance	25.05		
	Interest on operating capital	11.80		
	Crop Insurance	5.00		
	Miscellaneous Overhead (5% of above expenses)	4.32		
			102.55	
Contribution Margin				32.45
Indirect Costs:	Depreciation on buildings and equipment	27.42		
	Operator Labour	9.51		
			36.93	
Total Direct and Indirect Costs			139.48	
Gross Operating Profit				-(4.48)
Interest:	Land	42.00		
	Buildings and equipment	32.94		
			74.94	
Total of All Economic Costs			214.42	

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